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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/719,010	12/07/2000	Akira Miyazaki	017498/0149	5826

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FOLEY AND LARDNER
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER

CROWELL, ANNA M

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 10/09/2003

14

Please find below and/or attached an Office communication concerning this application or proceeding.

AS

Office Action Summary

Application No.

09/719,010

Applicant(s)

MIYAZAKI ET AL.

Examiner

Michelle Crowell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on August 5, 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☒ Claim(s) 9-14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1, 3, and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imafuku et al. (Japanese Patent Publication 10-092796) in view of Koshiishi et al. (U.S. 5,919,332).

Referring to Drawing 1, abstract, and paragraphs [0010], [0012] – [0016], Imafuku discloses a plasma treatment device using a polycrystalline alumina sintered product which has high plasma resistance. This plasma treatment device comprises a processing container 4 (reaction chamber), a showerhead 36 (upper electrode), an installation base 6 (lower electrode), and a clamp ring 24, which is used to hold the wafer W and used as a focal function (focus ring)

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to direct ions to the wafer W [0013]. The clamp ring 24 and shield ring 46 are made of the polycrystalline alumina sintered product. The polycrystalline alumina sintered product is made of alumina and magnesia (MgO) and has a purity of 99.9%, a bulk density of 3.98 g/cm^3 , and an average grain size of 10-100 micrometers.

Referring to Drawing 6, and paragraphs [0023]-[0024], Imafuku discloses that an electrostatic chuck 70 can be used to hold the wafer instead of a clamp ring. In addition, the focal ring 78 is used to direct ions to the wafer W [0024].

Imafuku fails to teach the surface roughness, electrode insulating member, and a covering member.

Referring to Figure 20 and column 27, lines 9-12, lines 46-60, Koshiishi teaches a plasma processing apparatus comprising a seal ring 125 (electrode insulating member) for electric insulation between the upper electrode 102 and the chamber 10, and a focus ring 119. Both the seal ring 125 and the focus ring 119 are made of quartz and have alumina-based ceramic layers 120 and 126 over them. The alumina has a surface roughness of $2\mu\text{m}$, to prevent secondary reaction products from sticking thereto, and to facilitate removal of any products. In addition, an alumina-based ceramic layer 131 (covering member) is provided along the chamber walls. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the alumina sintered product of Imafuku with surface roughness as taught by Koshiishi, and to provide the apparatus of Imafuku with the electrode insulating member and covering as taught by Koshiishi. This would protect the apparatus and parts from plasma damage, therefore extending the life of the parts, and prevent sticking to the parts.

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4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Imafuku et al. (Japanese Patent Publication 10-092796) in view of Koshiishi et al. (U.S. 5,919,332) as applied to claims 1, 3, and 4 above, and further in view of Matsubara et al. (U.S. 6,149,730).

The teachings of Imafuku in view of Koshiishi have been discussed above.

Imafuku in view of Koshiishi disclose the apparatus substantially as claimed, however fails to show a cover body.

Referring to Figure 2 and column 8, lines 1-35, Matsubara shows a chemical vapor deposition apparatus which uses a ring-shaped member 111 (cover body) to cover a peripheral portion of the wafer 106 (body). This ring-shaped member 111 prevents plasma processing on the peripheral portion of the wafer. It would have been obvious to one of ordinary skill in the art to provide the apparatus of Imafuku in view of Koshiishi with the cover body as shown by Matsubara. This would prevent plasma processing on the peripheral portion of the wafer.

5. Claim 2, 6, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imafuku et al. (Japanese Patent Publication 10-092796) in view of Koshiishi et al. (U.S. 5,919,332) as applied to claims 1, 3, and 4 above, and further in view of Ando (Japanese Patent Publication 01-213910).

The teachings Imafuku in view of Koshiishi have been discussed above.

Imafuku in view of Koshiishi disclose the apparatus substantially as claimed, however fails to teach the Si content and the alkali content.

Referring to constitution, Ando teaches an alumina composition to have a Si content of less 80 ppm, Mg content of less than 60 ppm, and alkali components less than 60 ppm. This

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alumina composition has excellent machinability qualities, good mechanical strength and high resistance to plasma. It would have been obvious to one of ordinary skill in the art at the time of the invention for the alumina sintered product of Imafuku to have a composition as taught by Ando. This would provide the alumina sintered product with excellent machinability, good mechanical strength and high resistance to plasma.

6. Claims 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Imafuku et al. (Japanese Patent Publication 10-092796) in view of Koshiishi et al. (U.S. 5,919,332) and Ando (Japanese Patent Publication 01-213910) as applied to claims 2, 6, and 7 above, and further in view of Matsubara et al. (U.S. 6,149,730).

The teachings of Imafuku in view of Koshiishi and Ando have been discussed above.

Imafuku in view of Koshiishi and Ando disclose the apparatus substantially as claimed, however fails to show a cover body.

Referring to Figure 2 and column 8, lines 1-35, Matsubara shows a chemical vapor deposition apparatus which uses a ring-shaped member 111 (cover body) to cover a peripheral portion of the wafer 106 (body). This ring-shaped member 111 prevents plasma processing on the peripheral portion of the wafer. It would have been obvious to one of ordinary skill in the art to provide the apparatus of Imafuku in view of Koshiishi and Ando with the cover body as shown by Matsubara. This would prevent plasma processing on the peripheral portion of the wafer.

Response to Arguments

7. Applicant's arguments filed August 5, 2003 have been fully considered but they are not persuasive.

Applicant has argued that unexpected results as compared to an embodiment that is closer to the claimed invention than any embodiment in the closest single reference applied by the PTO have been shown.

However, the first sentence of 716.02(e) states that the "claimed subject must be compared with the closest prior art to be effective to rebut a prima facie case of obviousness" and the closest prior art is Imafuku et al. in view of Koshiishi et al. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant has argued that Imafuku includes no example that is closer than Comparative Example 1.

However, it is improper for applicant to just arbitrarily select an average grain size of 13 μ m to meet the criteria of Comparative Example 1 when the average grain size in Imafuku is between 10-100 μ m. One of ordinary skill in the art could have selected an average grain size of 24, 27, or 40 μ m which is in the claimed range of the invention and examples 1-6. Therefore, the arguments are not persuasive, and the rejection is respectfully maintained.

Applicant has argued that since the individual examples (Table 1 and 2), which span the claimed ranges, are allowable, the claimed ranges are allowable.

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However, the unexpected results are not commensurate with the claimed range. The results in Tables 1 and 2 only show data for a specific average grain size, corresponding with a specific surface roughness and with a specific bulk density. Furthermore, the average grain size, the surface roughness, and the specific bulk density vary in each of the examples, resulting in not only one variable but also three variables changing in order to attain the right combination to yield unexpected results. Furthermore, unexpected results have not been demonstrated for a combination of an average grain size of $23\mu\text{m}$, surface roughness of $2\mu\text{m}$, and bulk density 3.9 g/cm^3 . A showing of unexpected results must be based on *evidence*, not argument or speculation. Therefore, the showing of unexpected results over the entire claimed range has not been established.

Allowable Subject Matter

8. Claims 9-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Crowell whose telephone number is (703) 305-1956. The examiner can normally be reached on M-F (8:00 - 4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (703) 308-1633. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

AMC *aml*
October 7, 2003

Luz Alejandro Mulero
LUZ ALEJANDRO-MULERO
PRIMARY EXAMINER